

# **AN ASSESSMENT OF ENERGETIC CONDITION FOR TWO POPULATIONS OF ADULT SUMMER CHINOOK SALMON IN THE WILLAMETTE VALLEY OF CENTRAL OREGON**

Ryan Mann<sup>1</sup>, Greg A. Taylor<sup>2</sup>, Christopher A. Peery<sup>1a</sup>, and Christopher C. Caudill<sup>1\*</sup>

<sup>1</sup>Idaho Cooperative Fish and Wildlife Research Unit, U.S. Geological Survey &  
Department of Fish and Wildlife Resources  
University of Idaho, Moscow, ID, 83844-1141

<sup>2</sup>USACE  
Willamette Valley Project  
PO Box 429, Lowell OR, 97452

<sup>a</sup>Currently; Cramer Fish Sciences and University of California Davis, Moscow, ID 83843

\*caudill@uidaho.edu

## **ABSTRACT**

In recent years, a high proportion (80-90%) of adult Chinook salmon transported above dams in some Willamette River tributaries have died prior to spawning. In 2008, we surveyed the energetic status of two populations of summer Chinook salmon in the Willamette River Valley of Central Oregon to assess whether initial energetic status is associated with prespawn mortality.

Between May 15<sup>th</sup> and July 14<sup>th</sup>, 2008 a total of 399 fish were sampled between two sites in the area, including 195 fish at Fall Creek Dam and 204 fish collected at the Dexter Dam Trap on the Middle Fork of the Willamette River. Salmon sampled at the Dexter Dam Trap were used for hatchery broodstock. Spawning success could not be assessed for this group. Fish collected, assessed for energetic condition, and PIT tagged at Fall Creek Dam were transported above the dam and allowed to spawn naturally. A total of 32 PIT tagged salmon were recovered from spawning ground surveys on Fall Creek, representing a recapture rate of 16.41%. Only three (9.4%) of the recovered fish were determined to be pre-spawn mortalities, and there was no clear relationship between these mortalities and initial energetic state. Notably, temperatures in the stream were uncharacteristically low and flow rates were high in 2008, which may provide an explanation for the good survival rates observed this year.

This result and other observations suggest prespawn mortality results from an interaction of environmental factors (particularly temperature) and energetic status. Multi-year sampling of adult energetic status and other metrics of condition will 1) provide insights to the factors causing prespawn mortality; 2) determine how the mean condition of fish varies from year to year in response to other environmental factors such as ocean conditions; and 3) will assist in the development of effective management strategies that minimize prespawn mortality in spawning tributaries.